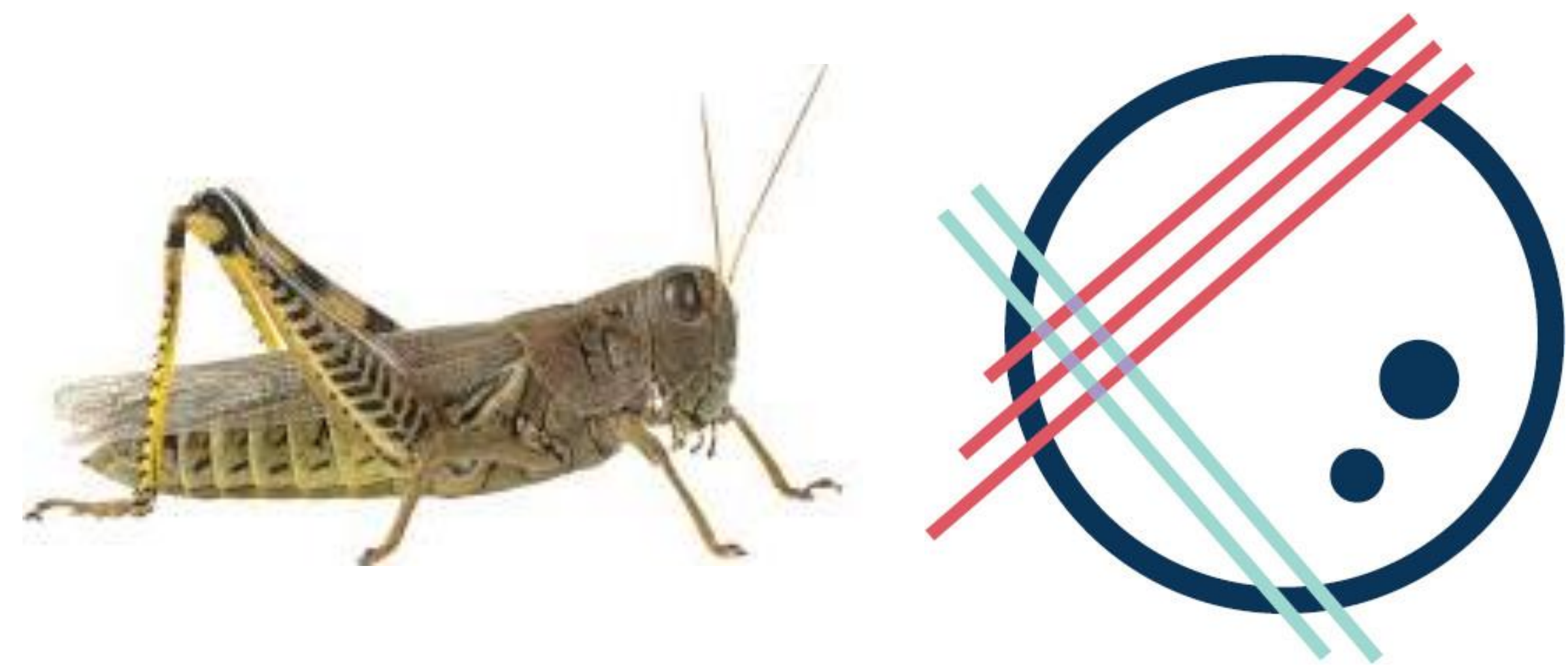


# Patience, Young Grasshopper: Analyzing the fungal composition of the grasshopper gut microbiome



**Staci Seitz** and Melani Muratore  
Advisors: Drs. Yvonne Sun and Chelse Prather



## Introduction

- Microbes are found all around us.
- Intestinal microbes, or gut microbiome, play an important role in overall animal health.
- The fungal communities within the gut microbiome of insects are important in insect physiology and thus, insect control.

## Main Questions

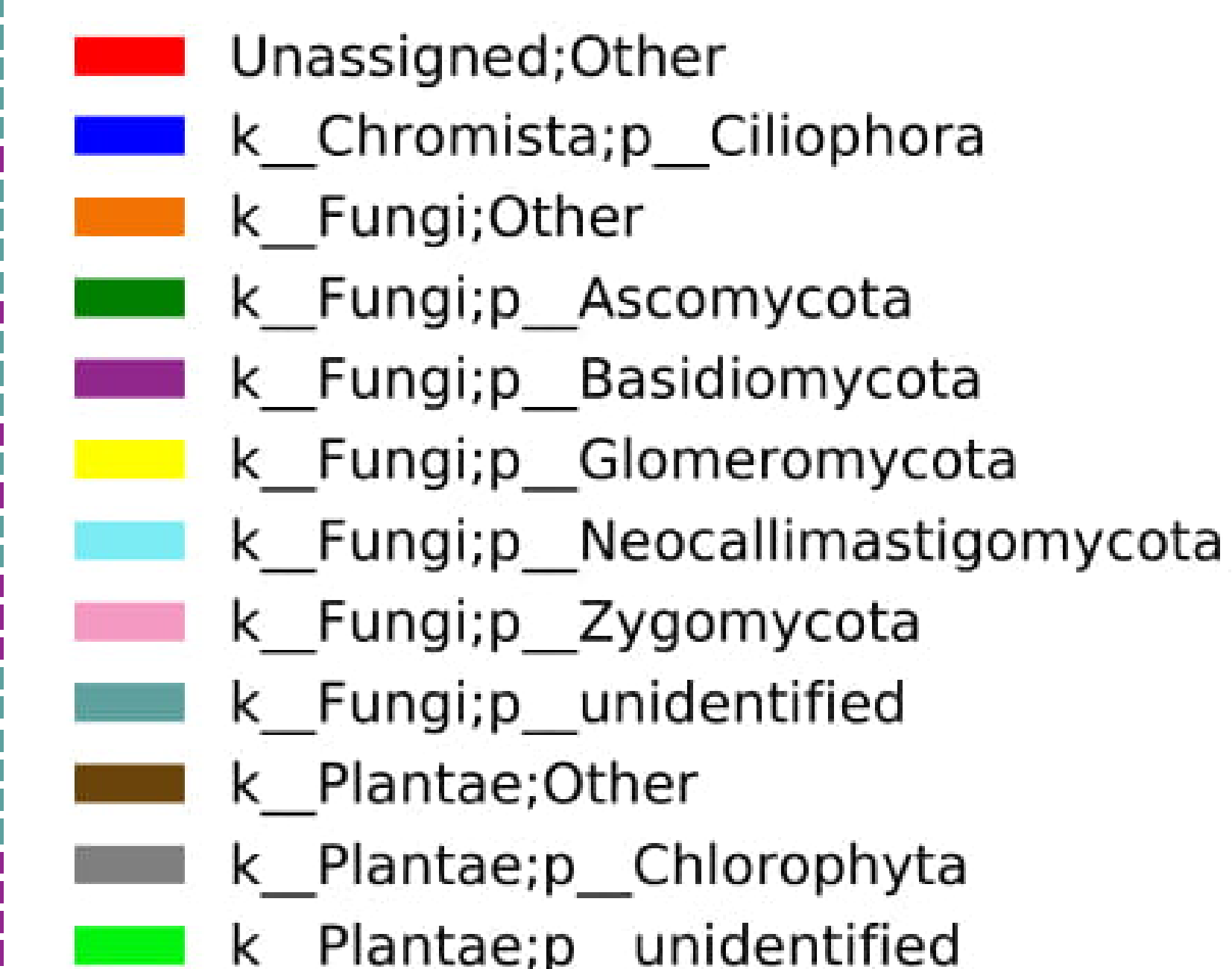
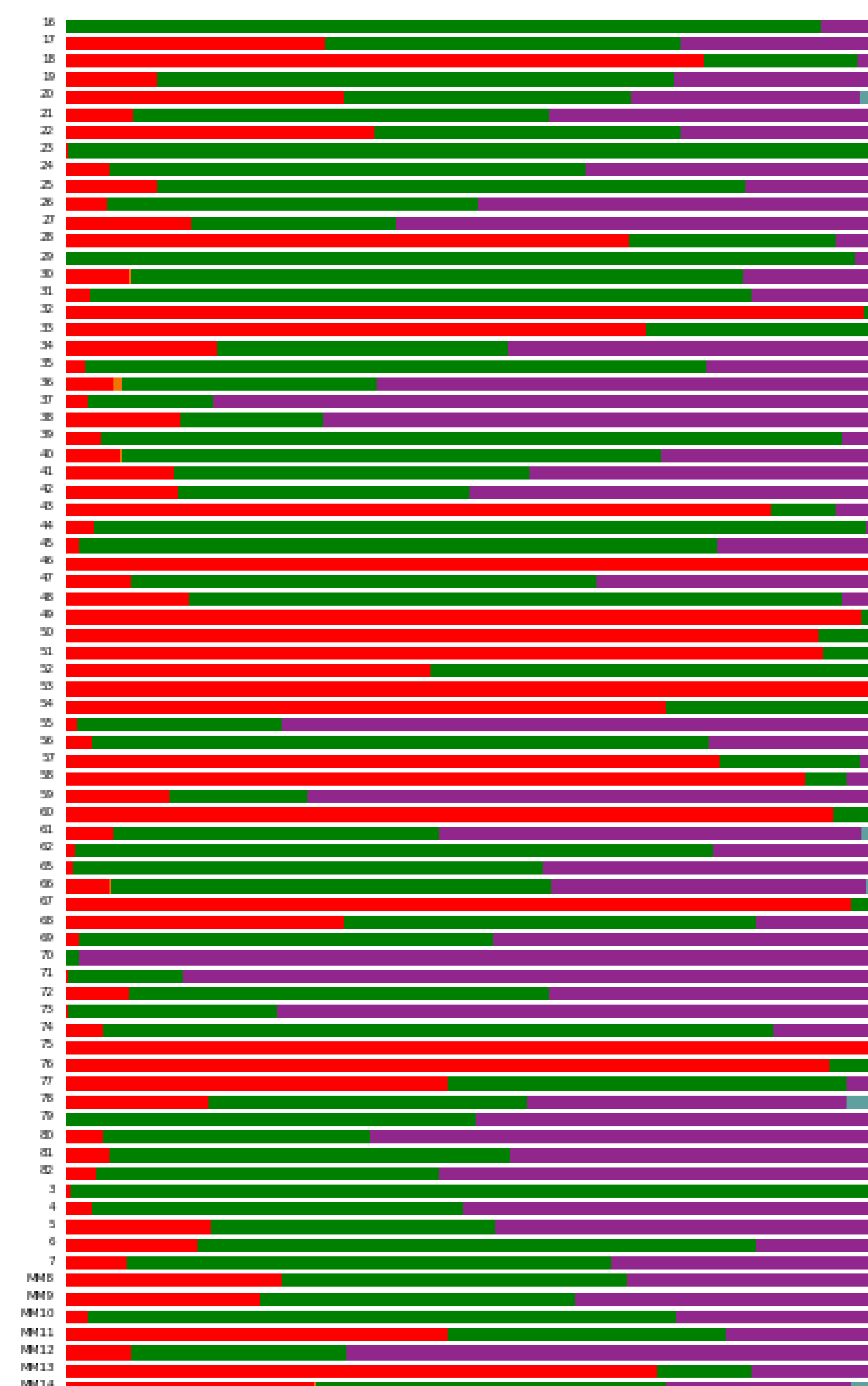
- What is the composition of the fungal communities in the microbiome of grasshoppers?
- What drives the composition of fungal communities within the microbiome of grasshoppers?

## Methods

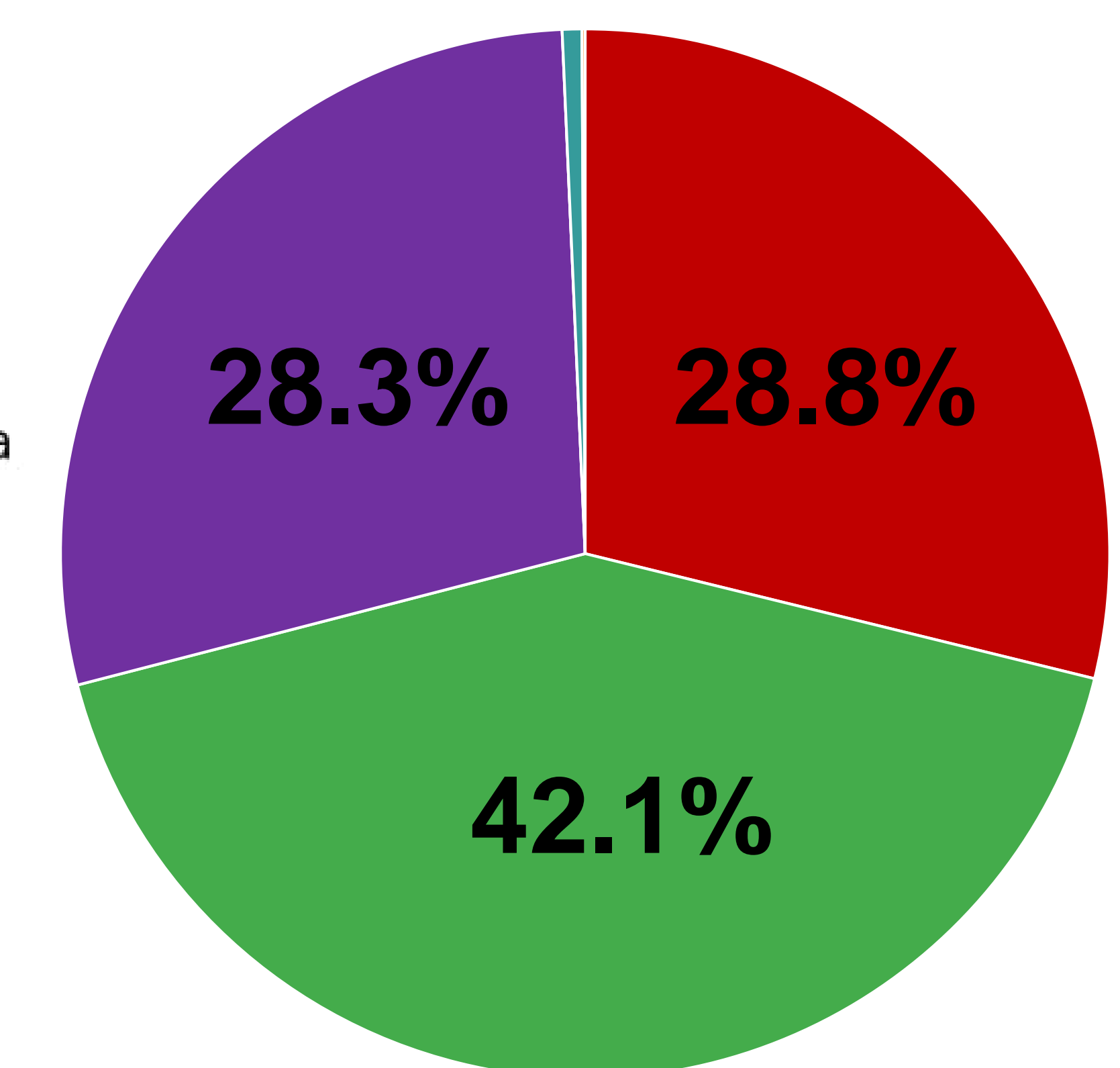
- The grasshoppers were collected in the summer of 2017 from a Texas prairie. The prairie was part of a multifactorial micronutrient experiment in which plots of the prairie were treated with various micronutrients.
- After collection and dissection, DNA was extracted from the grasshopper gut and submitted for sequencing by Zymo Research.
- Subsequently, the fungal and bacterial groups present in the sample were identified and analyzed using R programming.



## Results



Average Across Samples



## Summary

- The fungal phyla Ascomycota and Basidiomycota are most prevalent.
- The other phyla were scarcely found within the samples.
- Within Ascomycota, the class Dothideomycetes is most prevalent. Within Basidiomycota, the classes Tremellomycetes and Ustilaginomycetes are most prevalent.
- These classes of fungi are directly associated with plant matter.

## Future Direction

- I plan to continue to use R programming to further analyze the composition of the grasshopper gut microbiome for my Honors Thesis and Mathematics Capstone.
- I want to determine the drivers of the composition of the fungal communities within the grasshopper gut microbiome, specifically looking at species, nutrient treatment, and sex.

## Acknowledgements

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